IN THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the application:

1. (Currently Amended) ~~Integrated optics~~ An artificial cladding grating ~~characterised in that it comprises in~~ component for use in integrated optics, comprising:

a substrate;

an optical guide core ~~(2, 21 ,22 ,23, 24, 25),~~;

an optical cladding ~~(3, 31, 32, 33, 34, 35)~~ formed in said substrate, said optical cladding being independent of the core and surrounding at least a portion of the core ~~in a zone of the substrate called the~~, said optical guide core and said optical cladding having a zone of interaction ~~(I1, I2, I3, I4, I5) comprising~~ in said substrate; and

a grating ~~(19, 41, 42, 43, 44, 46 ) capable of coupling at least one~~ formed in said zone of interaction and constructed and arranged to couple a guided mode of the core to ~~at least one~~ a cladding mode or vice versa~~,~~;

~~the~~ wherein said zone of interaction ~~comprising a~~ is configured to provide coupling variation between the guided mode of the core and the cladding mode along ~~the~~ a direction of propagation of the modes, and

~~with the~~ wherein a refractive index of the cladding ~~being~~ is different from ~~the~~ a refractive index of the substrate and lower than ~~the~~ a refractive index of the core at least in ~~the~~ a part of the cladding next to the core in the interaction zone.

2. (Currently Amended) ~~Integrated optics~~ The artificial cladding grating component of claim 1, ~~characterised in that~~ wherein the coupling variation along the direction of propagation of the modes ~~may use~~ corresponds to a variation of the coupling ~~force~~ efficiency and/or the coupling wavelength.

3. (Currently Amended) ~~Integrated optics~~ The artificial cladding grating component of claim 1 ~~or 2~~, ~~characterised in that the coupling variation is obtained by modulation of the~~ wherein a section of the cladding in the interaction zone is modulated to create the coupling variation.

4. (Currently Amended) ~~Integrated optics~~ The artificial cladding grating ~~according to any~~ component of ~~claims 1 to 3~~ claim 1, ~~characterised in that the coupling variation is obtained by modulation of the centring~~ wherein a centering of the core with respect to the section of the cladding is modulated to create the coupling variation.

5. (Currently Amended) ~~Integrated optics~~ The artificial cladding grating component of claim 3 ~~or 4~~, ~~characterised in that the~~ wherein a modulation of the section of the cladding ~~and/or the modulation of the centring of the core with respect to the section of the cladding~~ is ~~a~~ uniform ~~variation~~.

6. (Currently Amended) ~~Integrated optics~~ The artificial cladding grating component of claim ~~3 or~~ 4, ~~characterised in that the modulation of the section of the cladding and/or the~~ wherein a modulation of the ~~centring~~ centering of the core with respect to the section of the cladding is ~~a variation by levels~~ uniform.

7. (Currently Amended) ~~Fabrication method of an~~ The artificial cladding grating ~~according of any of the previous claims, characterised in that the cladding, the guide core and the grating are respectively made by modification of the refractive index of the substrate so that at least in the part of the cladding next to the core and at least in the interaction zone, the refractive index of the cladding is different from the refractive index of the substrate and lower than the refractive index of the core and so that the zone of interaction has a coupling variation along the direction of propagation of the modes~~ component of claim 3, wherein a modulation of the section of the cladding is a discrete variation.

8. (Currently Amended) ~~Fabrication method of claim 7, characterised in that the modification of the refractive index of the substrate is obtained by radiation and/or by introduction of ionic species~~ The artificial cladding grating component of claim 4, wherein a modulation of the centering of the core with respect to the section of the cladding is a discrete variation.

9. (Currently Amended) ~~Fabrication method of claim 7 or 8, characterised in that it comprises the following steps~~ A method of manufacturing an artificial cladding grating component comprising:

~~— a) introduction of a first ionic species in the substrate so as to permit the optical cladding to be obtained after step c),~~

~~— b) introduction of a second ionic species in the substrate so as to permit the guide core to be obtained after step c),~~

~~— c) burying of the ions introduced in steps a) and b) so as to obtain the cladding and the guide core,~~

- ~~d) formation of the grating~~

providing a substrate; and

modifying a refractive index of said substrate to form an optical guide core, a cladding and a grating in said substrate, said optical guide core and said optical cladding having a zone of interaction in said substrate, and said grating being formed in said zone of interaction and constructed and arranged to couple a guided mode of the core to a cladding mode or vice versa,

wherein said zone of interaction is configured to provide coupling variation between the guided mode of the core and the cladding mode along the direction of propagation of the modes, and

wherein a refractive index of the cladding is different from a refractive index of the substrate and lower than a refractive index of the core at least in a part of the cladding next to the core in the interaction zone.

10. (Currently Amended) ~~Fabrication~~ The method of claim 9, ~~characterised in that the first and/or second~~ wherein said modifying includes irradiating said substrate and/or exposing said substrate to ionic species ~~is introduced by means of an ionic exchange or by ionic implantation~~.

11. (Currently Amended) ~~Fabrication~~ The method of claim 9 ~~or 10, characterised in that the substrate is made of glass and contains $Na^+$ ions, and the first and the second ionic species are $Ag^+$ and/or $K^+$ ions~~ wherein said modifying includes:

a) exposing the substrate to a first ionic species,

b) exposing the substrate to a second ionic species,

c) burying said first and second ionic species to form the cladding and the guide core, and

d) forming said grating.

12. (Currently Amended) ~~Fabrication~~ The method of ~~any of the claims 9 to~~ claim 11, ~~characterised in that step a) comprises the creation of a first mask (61) comprising a pattern capable of making the cladding, the first ionic species being introduced via this first mask and step b) comprises the elimination of the first mask and the creation of a second mask (65) comprising a pattern capable of the making the core, the second ionic species being introduced via this second mask~~ wherein the first and/or second ionic species are introduced by ionic exchange or by ionic implantation.

13. (Currently Amended) ~~Fabrication~~ The method of ~~any of claims 9 to 12~~ claim 11, ~~characterised in that the grating is obtained by the introduction of ionic species via a mask permitting the core and/or the cladding to be obtained, or obtained by a specific mask~~ wherein the substrate includes glass and contains $Na^+$ ions, and the first and the second ionic species includes $Ag^+$ and/or $K^+$ ions.

14. (Currently Amended) ~~Fabrication~~ The method of ~~any of claims 9 to 13~~ claim 11, ~~characterised in that the grating is obtained by local heating~~ further comprising:

defining a first mask on said substrate prior to exposing the substrate to a first ionic species, the first mask comprising a pattern configured to define the cladding, and the first ionic species being introduced via said first mask;

removing said first mask; and

defining a second mask on said substrate after removing said first mask and prior to exposing the substrate to said second ionic species, said second mask comprising a pattern configured to define the core, and the second ionic species being introduced via this second mask.

15. (Currently Amended) ~~Fabrication~~ The method of ~~any of claims 9 to 14~~ claim 11, ~~characterised in that the grating is obtained by etching of the substrate next to the interaction zone~~ wherein said grating is formed during exposure of said substrate to ionic species with a mask defining the core and/or the cladding, or formed with a specific mask.

16. (Currently Amended) ~~Fabrication~~ The method of ~~any of claims 9 to 15~~ claim 11, ~~characterised in that at least part of the burying is carried out the application of an electrical field~~ wherein the grating is obtained by local heating.

17. (Currently Amended) ~~Fabrication~~ The method of ~~any of claims 9 to 16~~ claim 11, ~~characterised in that at least part of the burying is carried out by re-diffusion in an ionic bath~~ wherein the grating is obtained by etching the substrate next to the interaction zone.

18. (Currently Amended) ~~Fabrication~~ The method of ~~any of claims 9 to 17~~ claim 11, ~~characterised in that all or part of the burying is carried out by a depositing at least one layer (68) on the surface of the~~ wherein the burying comprises applying an electrical field to said substrate.

19. (Currently Amended) ~~Fabrication~~ The method of ~~any of claims 9 to 18~~ claim 11, ~~characterised in that the first ionic species and/or the second ionic species are introduced with the application of an electrical field~~ wherein the burying comprises re-diffusing the first and second ionic species in an ionic bath.

20. (New) The method of claim 11, wherein all or part of the burying comprises depositing a layer on a surface of the substrate.

21. (New) The method of claim 9, wherein the first ionic species and/or the second ionic species are introduced with the application of an electrical field.